Department of Health
and the Welsh Office

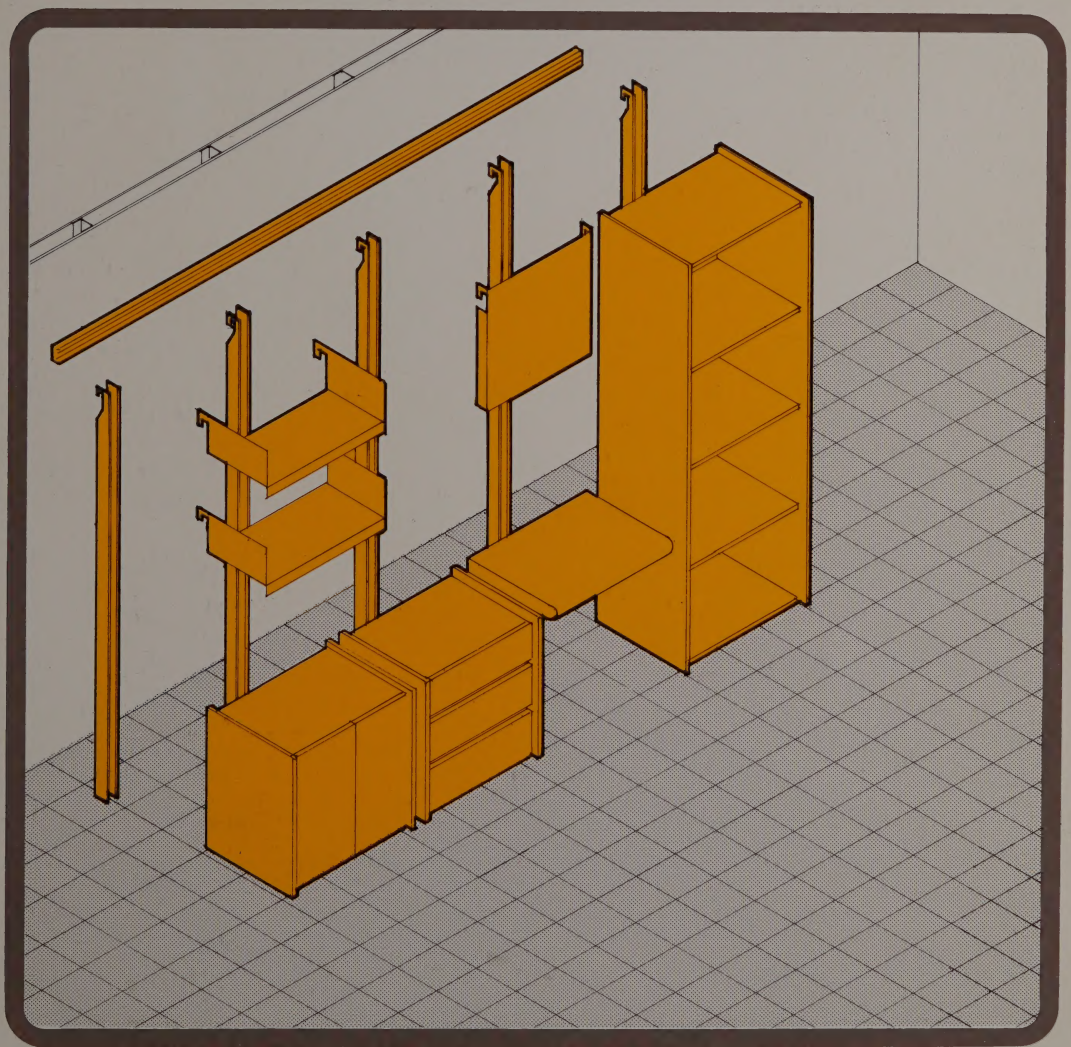
MC0016

Health Technical Memorandum

Building components

Demountable storage system

62



Department of Health
and the Welsh Office

Health Technical Memorandum

Building components

Demountable storage system 62

London:
Her Majesty's Stationery Office

©Crown copyright 1989
First published 1989
ISBN 0 11 321261 5

Contents

1 Introduction
1.1 Background
1.2 Scope and status
1.3 Relationship to other data
1.4 Terminology

2 System description
2.1 Typical installations
2.2 General principles
2.3 Benefits
2.4 Main dimensions
2.5 Availability and cost of the system

3 Component parts of the system
3.1 List of Components
3.2 Description of support components
3.3 Performance of support components
3.4 Description of user components
3.5 Strength
3.6 Surface finishes
3.7 Surface spread of flame
3.8 Testing of hinges locks and latches

4 Design application
4.1 Co-ordination with building and engineering design
4.2 Design of layouts
4.3 Use of non-standard user components
4.4 Security

5 Procurement
5.1 Procedures
5.2 Documentation
5.3 Pricing of support components
5.4 Responsibility for design and specification of the system

6 Installation
6.1 Sequence of work
6.2 Fixing the rail

7 The system in use
7.1 Re-use of components
7.2 Cleaning and maintenance

Appendices:
A Performance tests
B Supplementary specification and design data

References

1 Introduction

1.1 Background

This is one of a series of *Health Technical Memoranda* which provide specification and design guidance on building components for health buildings which are not adequately covered by current British Standards.

The series supersedes all Component Data Base Mk 3 (and earlier Manufacturers Data Base) information.

The numbers and titles of the HTM in the series are:

54 Building Components
55 Windows
56 Partitions
57 Internal glazing
58 Internal doorsets
59 Ironmongery
60 Ceilings
61 Flooring
62 Demountable storage system
63 Fitted storage system
64 Sanitary assemblies
65 Signs
66 Cubicle curtain track
67 Laboratory fitting out systems
68 Duct and panel assemblies
69 Protection
70 Fixings

The technical information in this series is the result of research and development funded by the Department as part of collaborative working arrangements over a number of years between the Department, the NHS, and Industry through the medium of the Component Data Base.
Because of the innovatory nature of the system which it presents, this HTM is the product of a particularly intensive period of activity within those working arrangements.

This began in 1979 with a survey of typical examples of storage installations throughout the NHS. This showed that without exception these comprised cupboards, worktops, shelving and the like, with some special features and aspects of specification to meet health building requirements, but essentially similar in form to domestic kitchen fittings, and permanently fitted to walls and floor.

In the great majority of cases it was evident that these installations had been overtaken by changes in user requirements resulting (to a greater or lesser degree) in inefficient working conditions for the users and those involved in cleaning and maintenance.

- inability to predict user requirements in sufficient detail over such a time scale
- inability of users to make necessary alterations to an installation to meet their changing needs – because of its fixed form.

Furthermore it was clear that this fitted form of installation demands a disproportionate share of project team and design team resources at the briefing, design and construction stages, and is wasteful and expensive in terms of builders' work.

It was therefore concluded that:

- a more flexible approach to fitting out at the briefing, design and installation stages is urgently required, with an ability to alter installations to meet changes in user requirements at any of these stages, or during the life of the building
- this did not preclude the need for, or suitability of, fitted installations in situations in which user requirements can be predicted with reasonable accuracy, are simple, and remain relatively unchanged.

The first of these conclusions led to the development of the demountable storage system described in this HTM.

The second led to the parallel development of a fitted storage system as described in HTM 63.

In order to reduce development costs and time scale to a minimum, the demountable storage system has been developed around certain components for which patent and copyright are held by one company.

Other proprietary systems may be offered which satisfy the criteria.

Any enquiries regarding the technical content of this HTM should be directed to Health Building Directorate, Department of Health, Euston Tower, 286 Euston Road, London NW1 3DN.

1.2 Scope and status

This HTM is intended to provide users and manufacturers with an achievable solution to the problems associated with fitted installations (as referred to in 1.1).

It does not preclude the possibility of the development and introduction to the NHS of alternative versions of a demountable storage system in due course.

'Description of support components' (3.2) provides outline descriptions of the components around which the system has been developed, and which (with the exception of the mobile support units) are obtainable only from the patent and copyright holder named in that section.

'Description of user components' (3.4) provides outline descriptions of components which (together with the mobile support units in 3.2) are open to manufacturing and supply competition.

This HTM neither diminishes a manufacturer's responsibility for the fitness for purpose of his products, nor does it lessen the responsibility of a design team for selection of components to meet project requirements.

1.3 Relationship to other data

The main sources of other data relevant to the system are listed in the References section.

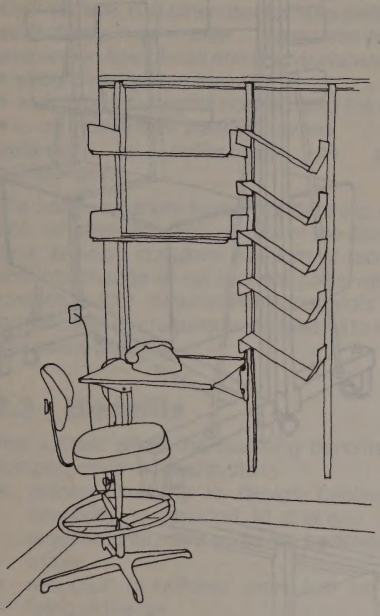
Preparation for printing of this HTM was completed in August 1985 and revised in August 1988 and is based on data current at that date. Readers should ensure that they use the latest edition of all building legislation, British Standards, etc., and give first preference to products and services from sources which have been Registered under BSI Quality Assurance procedures or other certification schemes.

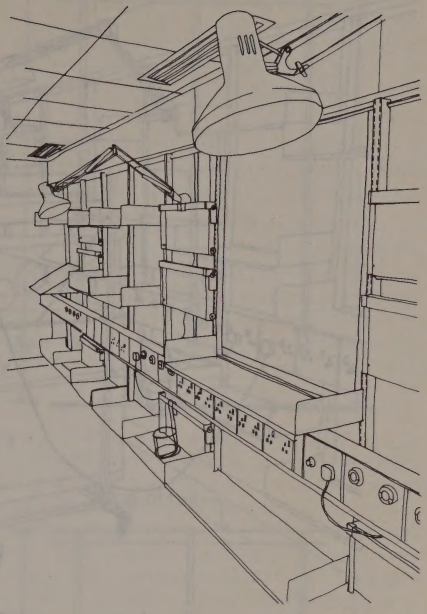
1.4 Terminology

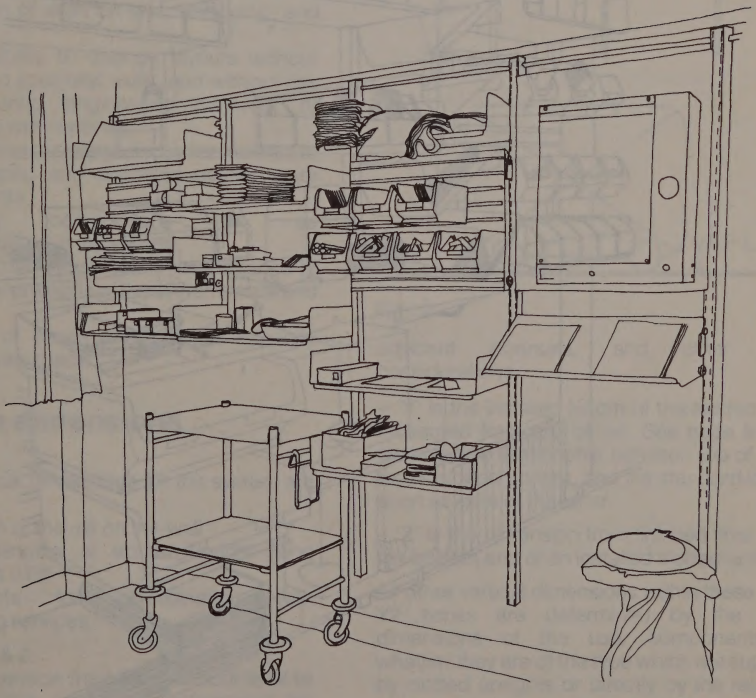
All dimensions are in millimetres but the abbreviation 'mm' is used only where it is needed for clarity or consistency.

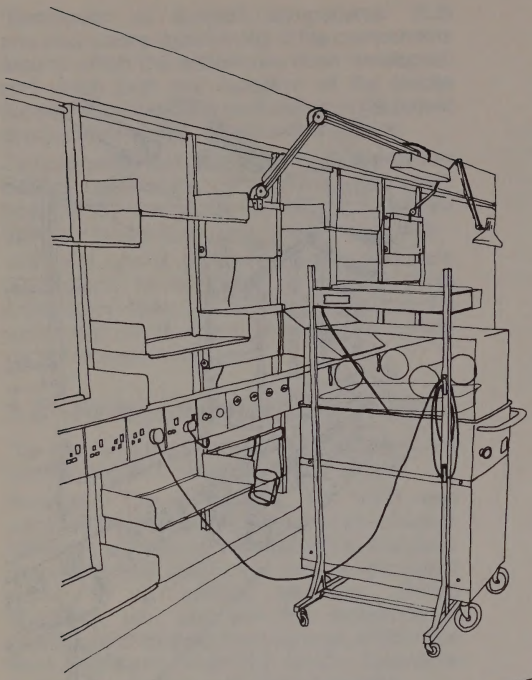
2 System description

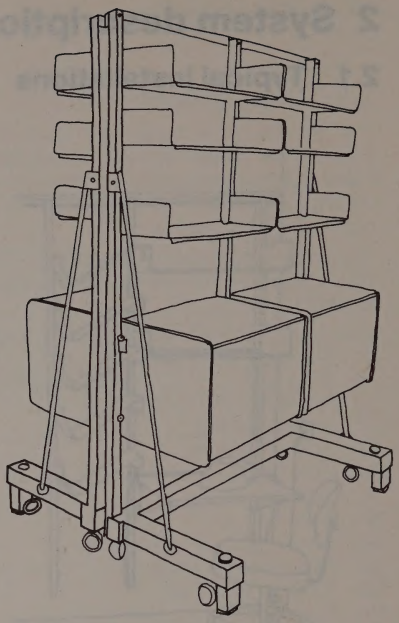
2.1 Typical installations











2.2 General principles

The system is based on a horizontal rail fixed to walls at door-head height.

Components providing a wide range of storage, work surface, and other user facilities *(referred to collectively as user components)* are suspended free of wall and floor surfaces:

- either directly from the rail,
- or on slotted uprights hooked onto the rail,
- or on mobile floor standing frames

(referred to collectively as support components).

The only permanent fixings are between rail and wall. All other connections are of the placement type, allowing complete freedom of movement and interchange of component parts within the functional and dimensional constraints of the system, and any requirements relating to security and safety (see 4.4).

2.3 Benefits

The system offers the following benefits when compared with a fitted system:

- greater flexibility in design briefing, and capability to respond to changes in user requirements, right up to the commissioning stage
- reduction of builders' work (per se) to the fixing of the rail
- corresponding reduction in requirements for supervision of work on site, 'snagging' and the like
- user capability to change layouts without recourse to specialist skills, and without risk of puncturing engineering services, or damage to wall surfaces
- a wide choice of storage and other facilities to meet specific and precisely defined user requirements
- proprietary components can be accommodated in the system
- more effective cleaning and maintenance of the component parts of the system, walls and floor.
- capability of maximising storage capacity within a given space.

2.4 Main dimensions

Vertical:

The main vertical dimensions for the system are derived from:–

- the location of the rail on the wall
- standard lengths of slotted upright (long 1844: short 919)
- requirements for co-ordination with engineering services.

Thus in Figs. 1 & 2:

– 'X' is the dimension from finished floor level to top of rail, This must be determined by requirements for alignment of the rail with

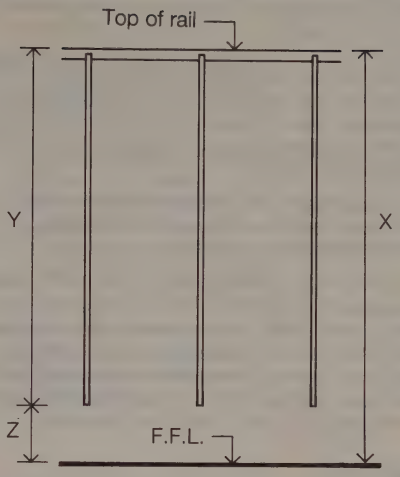


Fig. 1

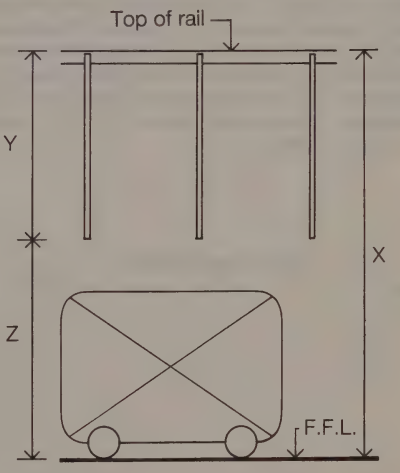


Fig. 2

adjacent doorsets, and other design considerations.

– 'Y' is the installed length of the slotted upright measured from top of rail. See page 9 for the dimensional relationship between top of rail and top of slotted upright, and the standard long and short lengths of the latter.

– 'Z' is the dimension from finished floor level to the bottom end of an installed slotted upright.

All other vertical dimensions within these Y1 and Y2 zones are determined by the vertical dimensions of the user components, and whether they are of the type which are supported by slotted uprights or directly by the rail. In the former case a number of alternative vertical locations are possible, in the latter case, only one.

In the case of the long slotted upright (see Fig 1) the 'Z' dimension will depend upon requirements for the location of engineering terminals as described in 4.1 and illustrated in Fig 5 on page 22 In the case of the short slotted upright, the 'Z' dimension will depend upon requirements for clearance over fixtures (eg a radiator) or over mobile equipment parked against the wall (as illustrated in Fig 2).

In either type of situation the required 'Z' dimension can be achieved by site cutting of the slotted uprights to reduce their length.

All other vertical dimensions within the Y zones are determined by the vertical dimensions of the user components, and whether they are of the type which are supported by slotted uprights or directly by the rail. In the former case a number of alternative vertical locations are possible, in the latter case, only one.

Horizontal:
Horizontal dimensions are dependent upon the particular form of slotted upright on which the system is based, and its relationship to the user components it supports. Preferred dimensions are 600 and 750 are based on proprietary user components. In the case of the slotted uprights supplied by Simple Systems Ltd. (see **3.2**) horizontal dimensions relate to the space between uprights.

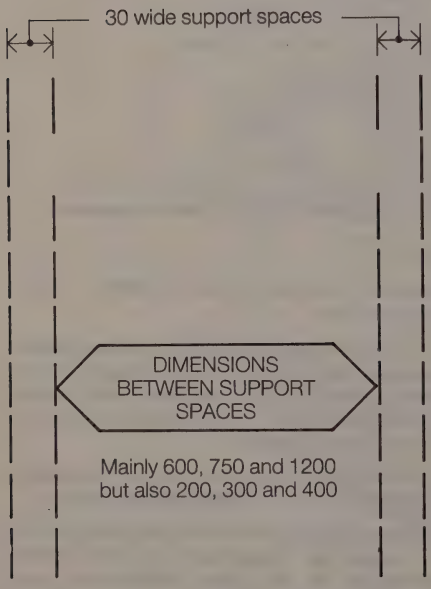


Fig. 3

The support spaces are not needed where user components are connected directly to the rail. However, they may be retained as space available within the overall width of an installation to allow for possible later substitution of user components supported on slotted uprights (see Fig. 4).

2.5 Availability and cost of the system

In developing this version of a demountable storage system around support components from a single source of supply protected by patent and copyright, the DoH has given careful consideration to the possible consequences of that, and intends that in the event of the sole supplier named in 3.2 ceasing to trade, failing to perform satisfactorily, or act reasonably, in respect of design, performance, quality, or price of the support components, the Department will exercise its statutory powers to make use of, or procure others to make use of the patent, copyright and relevant shop drawings relating to those components in the public interest.

With regard to the pricing of the support components, appropriate procedures for obtaining competitive tenders for the system (as outlined in **5.3**) should be followed.

With regard to the cost of the system as a whole, a special study has shown that it is likely to compare favourably with current costs of fitted installations, and in particular, reduces installation costs from 25% to 10% of the overall cost.

This indicates that in addition to the operational benefits listed in **2.3** the system offers the prospect of a substantial improvement in return on the capital cost of fitting out health buildings.

3 Component parts of the system

3.1 List of components

Support components
- Rail and cover
- End stops for rail
- Slotted uprights
- Slotted upright security clip
- Book-end brackets
- Heavy duty brackets
- Heavy duty rail
- Small insert support set
- Large insert support set
- Carcase security set
- Carcase hook
- Board hook
- S-hook
- Mobile support units

User components

Open storage:
- Carcase units
- Built-up units

Closed storage:
- Cupboards with up-and-over door
- Cupboards with side-hung doors
- Ward drugs cupboard (lockable)
- Medicines cupboard (lockable)
- Urine test cupboard (lockable)
- Drawer units

Boards and panels:
- Dry marker boards
- Pin boards
- Equipment panels: Type A
- Equipment panels: Type B
- Splashback panels
- Grooved panels
- Instrument rail panel
- Dispenser panels

Shelves:
- One-piece shelves
- Three-piece shelves
- Writing or display shelves
- Work surface shelves
- Filing shelves
- Heavy duty shelves

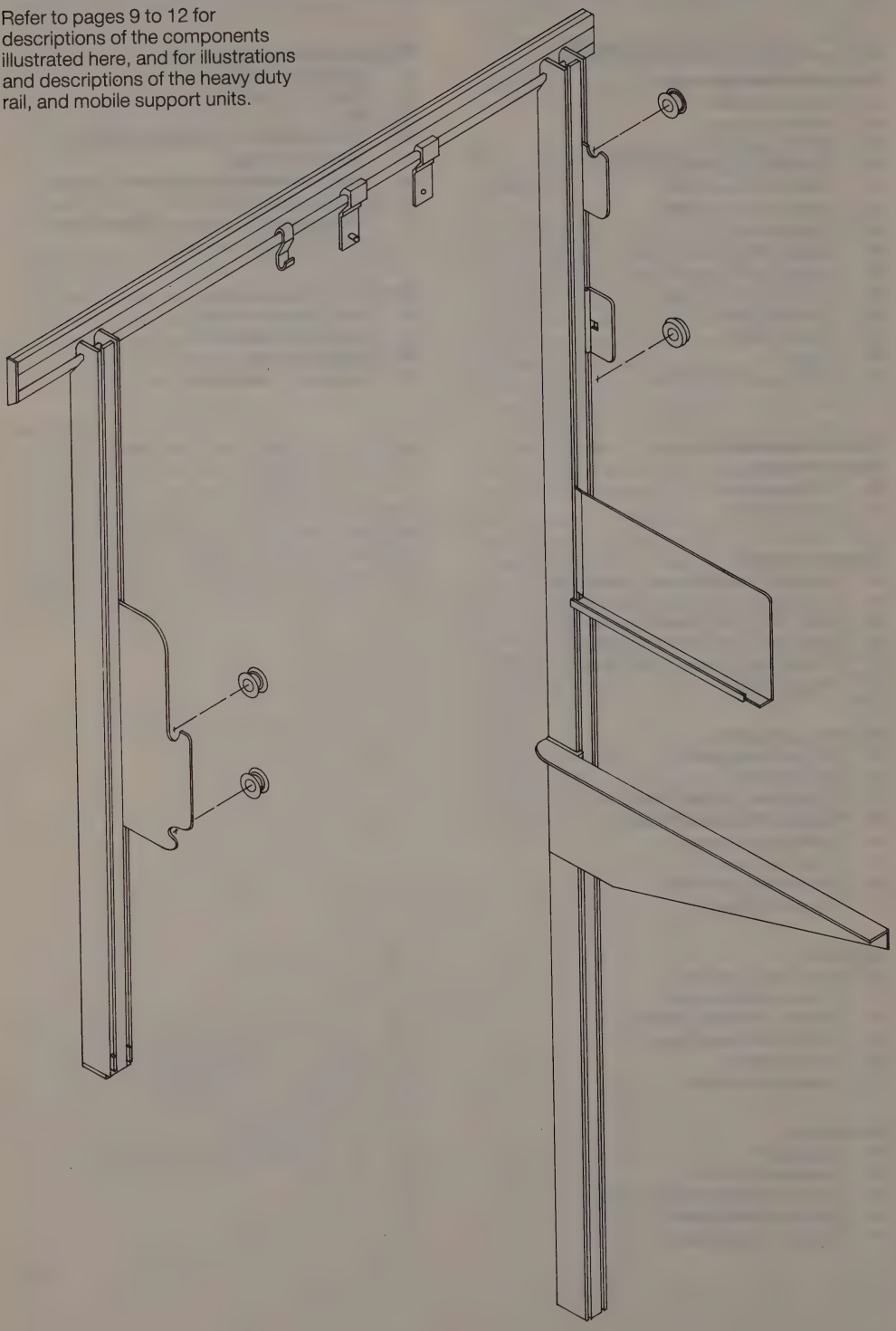
Worktops:
- Aluminium
- Linoleum faced
- Post-formed laminate faced
- Stainless steel, plain
- Stainless steel, dished

Water serviced components:
- Plumbing services panel
- Hand rinse basin
- Sink
- Sink with drainer, dished and plain, or dished and fluted
- Sink with drainers dished and plain, or dished and fluted
- Double sink and drainers, dished and plain or dished and fluted

Ancillary components:
- Tote boxes and other proprietary containers
- Catheter trays
- Accessory backboard

Support components

Refer to pages 9 to 12 for descriptions of the components illustrated here, and for illustrations and descriptions of the heavy duty rail, and mobile support units.



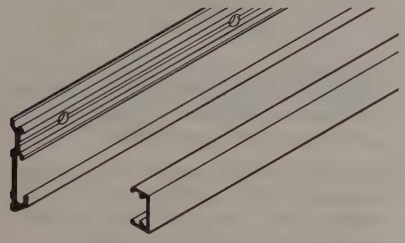
3.2 Description of support components

These components (with the exception of the mobile support components) are obtainable only from Simple Systems (Architectural) Ltd, 90 Park Road, Hampton Wick, Kingston-upon-Thames, KT1 4AY.

Except where otherwise stated they are fabricated from aluminium alloy with all exposed surfaces satin anodised.

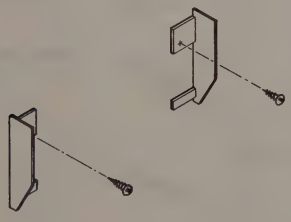
The following are outline descriptions only, and are not intended to be product specifications which should be obtained from the above source, together with any technical details which manufacturers of the user components or users of the system may require.

- Rail and cover



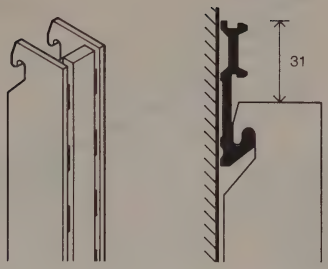
Supplied as a pair in 2400 lengths. The rail is 56 between top and bottom edges and has fifteen 7.25mm diameter fixing holes at approximately 167 centres starting 30 from either end (see 6.2 for recommended methods of fixing to walls or partitions). The cover is secured by snap-on action.

- End stops for rail



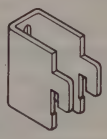
Supplied as a handed pair complete with screws. Intended for use only where ends of rails are exposed.

- Slotted uprights



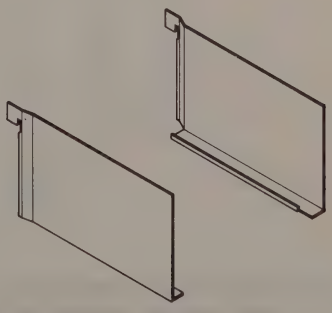
Available in two lengths, long 1844, and short 919. Note relationship of these to top of rail when installed.

- Slotted upright security clip



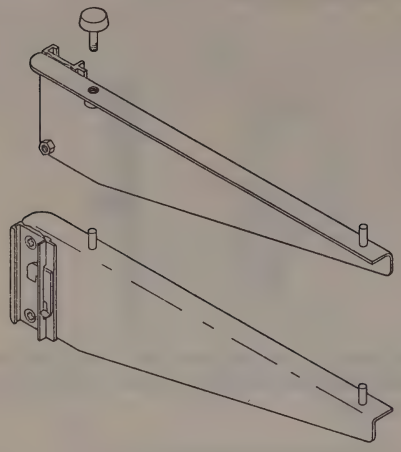
Supplied singly without screws. Intended for use in securing the bottom ends of slotted uprights to the wall, as referred to in 4.4.

- Book-end brackets



Supplied in handed pairs in two sizes to suit 250 and 325 deep shelves. The upstands engage in grooves in the underside of board material shelves. No fixings required. Also available in epoxy coated finish.

- Heavy duty brackets



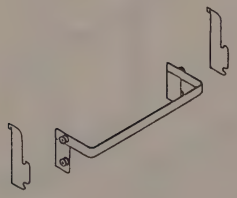
Designed to support heavy duty shelves, worktops and sinks. Supplied as handed pairs, or as single intermediate supports.

The details of the top edge of these brackets vary according to the user components they are required to support. These variants are:

- one spigot at front end, and threaded hole at rear to receive milled head holding down bolt which passes through the flange of a metal worktop, or heavy duty shelf
- spigots front and rear to engage in holes on underside of a board material worktop, or heavy duty shelf.

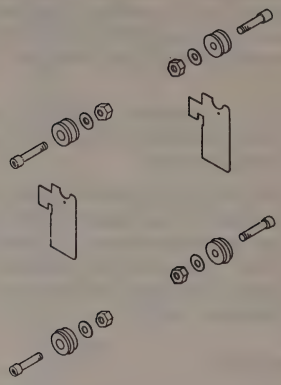
Spigots can be removed when brackets are used as intermediate supports.

- Heavy duty rail



Supplied with large support insert set in 6M width only. The rail must be specified as having a particular purpose so that it can be supplied with hooks or other attachments (eg for supporting items of orthopaedic equipment).

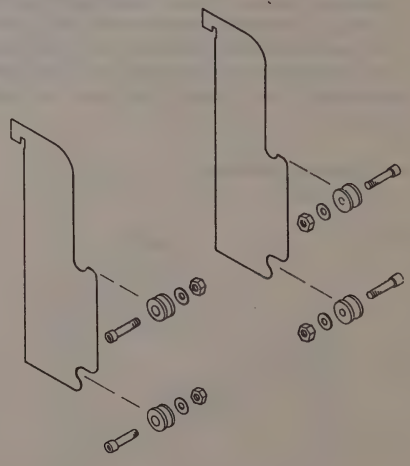
- Small insert support set



Supplied as a set with a user component to be supported on slotted uprights. The two pairs of bobbins are pre-fixed to the user component, and the inserts supplied loose.

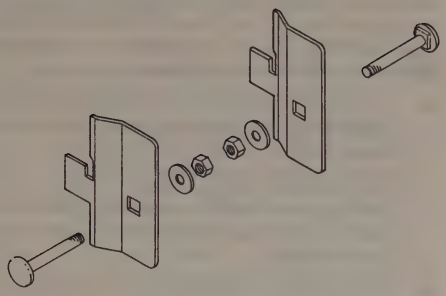
When the latter are hooked into position on a pair of slotted uprights, and the user component (with bobbins attached) offered up into position, the upper grooved bobbins engage on the inserts, and the lower flanged bobbins engage in grooves in the slotted uprights.

- Large insert support set



All as for the small insert support set, but upper and lower bobbins are grooved and engage in the inserts. Intended for heavy duty in situations involving fairly frequent re-location of the user component. For these reasons its use in the system is limited to supporting the heavy duty rail (see opposite), writing or display shelves, and work surface shelves (see 3.4).

- Carcase security set

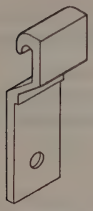


Supplied as a set for attachment to lockable closed storage units (other than ward drugs and medicine cupboards) to prevent unauthorised removal of the unit from an installed position.

The hooks on the plates engage in the slotted uprights to prevent the unit being lifted off its insert supports.

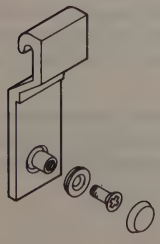
The unit must be lockable to prevent access to the securing nuts, and the sides of the carcase pre-drilled for the bolts.

- Carcase hook



Supplied without fixing screws and designed for letting into the backs of carcases which are required to hang direct from the rail.

- Board hook



Similar function to the above, but supplied with fixings for attachment to boards through the face of the material.

- S-hook

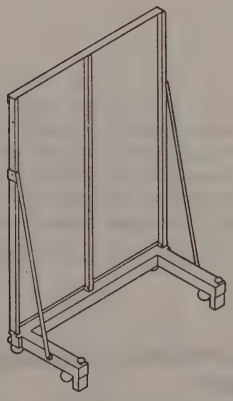
A general purpose hook for supporting items for which this method of suspension is appropriate.

- Mobile support units

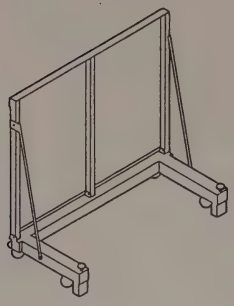
These units are intended to provide small areas of vertical surface with integral slotted uprights which will accommodate any components.

They are capable of being easily moved and parked to suit user activities and to facilitate floor cleaning.

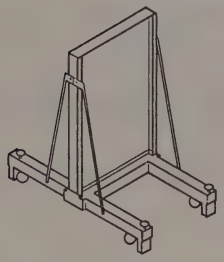
They are available as high backed single-sided units thus:–



or as low-backed single sided units thus:–



or as low-backed double-sided units thus:–



Single-sided units should fold for ease of transport and manoeuvring in narrow spaces; and their front to back dimension should enable easy passage through door openings when in use. Also they should be designed to park back-to-back to form double sided assemblies.

All units should be fitted with levelling/stabilising devices.

3.3 Performance of support components

Loading tests on the rail and slotted uprights commissioned by the DHSS have shown that the support system itself is unlikely to fail due to overloading in normal health building conditions. Tests showed that when the rail was bolted to steel the slotted upright failed at a load of 850 kg.

This means that the construction and condition of the wall or partition and the type of fixing device employed are critical factors in determining the safe working load for a particular installation. Other factors that should be considered are:

- the amount of deflection in the rail at points of connection of slotted uprights, which will be acceptable
- the extent to which loads imposed on an installation might be increased by the users during its life as a result of changes in user requirements
- the factor of safety applied in calculating a safe working load.

As a result of the tests referred to above a safe working load is offered as general guidance only and is based on:

- 265mm length of rail with two fixings 30 mm from ends of rail, mounted on hollow plasterboard partition with two layers of 9.5 mm plasterboard installed in accordance with Appendix A of HTM 56: Partitions
- maximum deflection of the rail of 2 mm at the point of connection of a slotted upright
- a factor of safety of 3
- 6 mm diameter proprietary metal cavity fixing devices.

Within the above criteria a safe working load of 25 kg per slotted upright can be considered.

In new hollow plasterboard partitions a timber nogging fitted between metal studs at rail level and occupying the full width of the cavity should provide safe working loads. See HTM 56 for details of heavyweight fixings.

For installations to be mounted on existing hollow plasterboard partitions without timber noggings the load bearing performance of the partition may be improved by reinforcing the face of the plasterboard behind the rail with spacer strips.

New masonry walls and partitions erected in accordance with BS 5628 and with fixings recommended by the masonry and fixings manufacturers including the appropriate factors of safety should provide safe working loads.

Safe working loads for installations mounted on existing masonry walls and partitions will depend upon the condition of the masonry and the condition and thickness of plasterwork or other facing materials.

Users should make a careful assessment of local conditions, select suitable fixing devices and carry out loading tests to determine safe working loads for installations.

3.4 Description of user components

This section describes the component parts of the system from which the majority of storage requirements in health buildings can be met.

It is intended that all the user components covered in the following pages will be obtainable on a competitive basis from a number of sources.

To ensure fitness for purpose, and compatibility with the system, users are strongly advised to obtain products which comply with the performance requirements set out in Appendix A.

The component illustrations in this section are intended to provide a general indication only of the system design requirements, and the descriptions are confined to:

- method of support
- main dimensions
- intended use (if not self-evident)
- reference to aspects of fitting out of the components and the like, which will be subject to manufacturer design initiatives.

Co-ordinating dimensions are given as appropriate under the following designations:
H = the vertical height of the component
W = the width of the component
D = the depth (front to back) of the component.

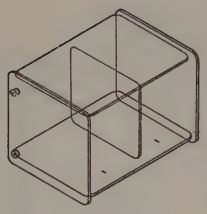
All user components should be delivered to site complete with appropriate support components for attachment to slotted uprights or the rail.

For specifications of materials and finishes of these components see Appendix B.

Open Storage

- Carcase units

Connected to slotted uprights by small insert support set as illustrated, or by integral hooks



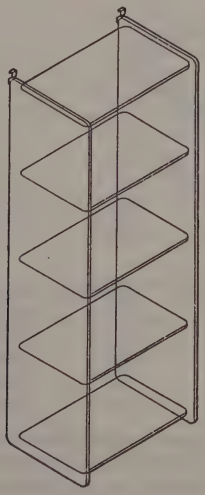
H	W	D
425	600	325
425	600	425
425	750	325
425	750	425

The deeper unit should be used under worktops, or in the same bay as other user components of equal depth.

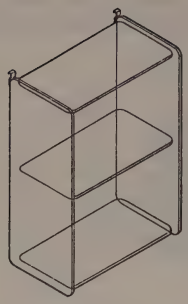
Refer to manufacturers' product data for details of alternative positions of vertical divider(s) and/or shelving.

- Built-up units

Rail hung or built up on slotted uprights.



H	W	D
1800	600	325
1800	600	425
1800	750	325
1800	750	425



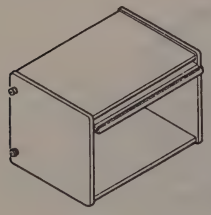
H	W	D
900	600	325
900	600	425
900	750	325
900	750	425

Refer to manufacturers' product data for availability and details of assembly of separate side panels, shelving and vertical dividers.

Closed Storage

Carcase units connected to slotted uprights by small insert support sets. Hinged doors open through 180°

- Cupboards with up-and-over door

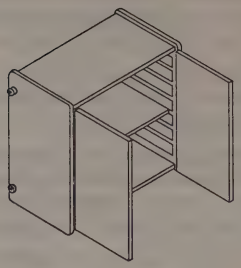


H	W	D
425	600	325
425	600	425
425	750	325
425	750	425

The deeper units should be used under worktops or in the same bay as other user components of equal depth. The 325 depth units are intended for use above worktop level, but care should be taken that the projection of the door when retracted does not create a hazard for users.

Refer to manufacturers' product data for details of alternative shelf and tray arrangements, optional provision of locks, and details of up-and-over door gear.

- Cupboards with side-hung doors

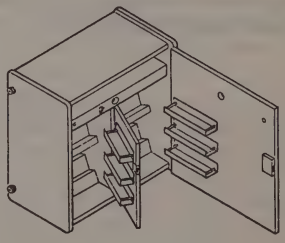


H	W	D
600	600	250
600	600	325
600	600	425
600	750	250
600	750	325
600	750	425

Refer to manufacturers' product data for details of alternative shelf and tray arrangements and optional provision of locks.

- Ward drugs cupboard (Lockable)

With lockable outer and inner doors and protective warning light system.



H	W	D
600	600	325

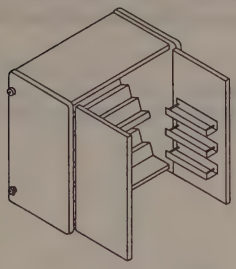
Left and right hand versions.

For use in areas under 24 hours surveillance, and should be electrically connected to a warning light at a staff base or other control point.

Refer to manufacturers' product data for details of controlled drugs section, shelving, locks, and warning light system.

Refer to 4.4 for special security arrangements.

- Medicines cupboard (lockable)



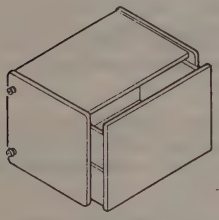
H	W	D
600	600	325

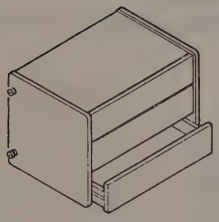
Refer to manufacturers' product data for details of alternative shelving arrangements and lock.

- Urine test cupboard. (Lockable)

As above, but with central vertical divider panel and any required combination of stepped and adjustable shelving.

- Drawer units





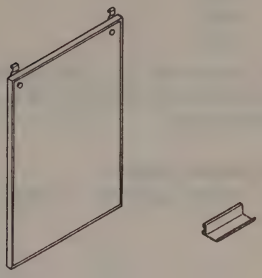
H	W	D
425	600	425

Refer to manufacturers' product data for H dimensions of drawers, optional provision of locks, and details of drawer sliding gear.

Boards and panels
H dimensions of rail-hung boards and panels are from top of rail

- Dry marker boards

Rail hung complete with marker shelf



H	W	D
950	600	—
950	1200	—

Intended for use as dry-wipe boards and/or magnetic boards.

- Pin boards

Rail hung

H	W	D
950	600	—
950	1200	—

- Equipment panels: Type A

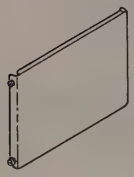
Rail hung

H	W	D
950	200	—
950	300	—
950	400	—
950	600	—
1200	200	—
1200	300	—
1200	400	—
1200	600	—

Intended for mounting a wide variety of equipment by drilling and bolting to the panels hung direct from the rail.

- **Equipment panels: Type B**

Connected to slotted uprights by small insert support sets

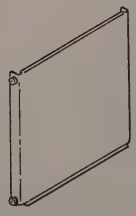


H	W	D
300	600	—
600	600	—
1000	600	—

These panels have the same function as the rail-hung equipment panels but because of their method of support can be located in a number of different positions vertically, and above or below other similarly supported components.

- **Splashback panels**

Connected to slotted uprights by small insert support sets

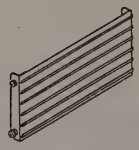


H	W	D
600	600	—
600	1200	—

These panels have the same function as the equipment panels but are intended for use directly above the hand-rinse basin, sinks or sinks and drainers. Tap holes should be specified as necessary.

- **Grooved panels**

Connected to slotted uprights by small insert support sets



H	W	D
150	600	—
300	600	—
450	600	—
150	750	—
300	750	—
450	750	—

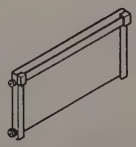
These panels provide a means of supporting hook-on type components such as tote boxes and catheter trays.

If two or more of these panels are mounted side by side in adjoining bays, some types of hook-on components can bridge the gap(s) between them.

Refer to manufacturers' product data for details of the grooves and upstands on these panels which may be discontinuous.

- **Instrument rail panel**

Connected to slotted uprights by a small insert support set

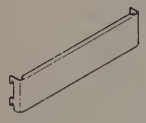


H	W	D
300	600	—

This panel provides a means of supporting a length of proprietary instrument rail, thus enabling equipment compatible with the rail to be mounted and demounted at will.

- Dispenser panels

Connected to slotted uprights by integral hooks



H	W	D
150	600	—
300	600	—

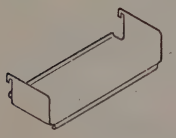
These panels provide a means of supporting dispensers of various kinds directly above work surfaces.

They have integral hooks top and bottom which engage in the slotted uprights and prevent tilting of the panel when a dispenser is in use.

Shelves

- One-piece shelves

Connected to slotted uprights by integral hooks

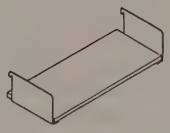


H	W	D
130	300	250
130	600	250
130	600	375
130	750	250
130	750	375

Intended for use in medical/nursing areas as they have no joints and rounded internal angles for ease of cleaning.

- Three-piece shelves

Connected to slotted uprights by book-end brackets

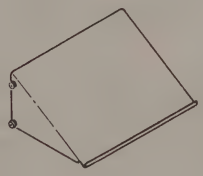


H	W	D
130	600	250
130	600	325
130	750	250
130	750	325

Intended for use in general areas. In particular the 7.5M versions are intended for bulk storage.

- Writing or display shelves

Connected to slotted uprights by large insert support sets



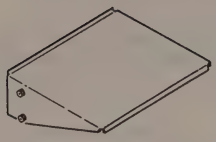
H	W	D
200	600	500
200	750	500

Intended for use in busy medical/nursing areas where staff need to do paper work in a standing position.

Alternatively they can serve as display shelves in libraries or tutorial areas, or for holding items such as X-ray envelopes which need to be kept flat.

- Work surface shelves

Connected to slotted uprights by large insert support sets

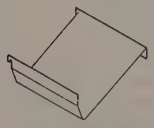


H	W	D
200	600	500
200	750	500

They are intended for use where a single bay width of work surface is acceptable, will be fairly frequently adjusted for height or relocated, and need not match adjoining work surfaces.

- Filing shelves

Connected to slotted uprights by integral hooks

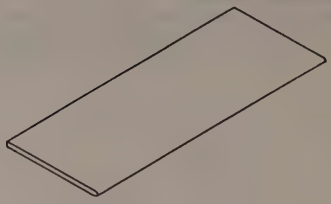


H	W	D
200	300	250
200	300	325

Intended for use in areas involving office type activities, or in diagnostic areas for storing X-ray envelopes and the like.

- Heavy duty shelves

Connected to slotted uprights by heavy duty brackets



H	W	D
—	600	500
—	750	500

Intended for use in providing for storage of linen, packaged goods or the like.

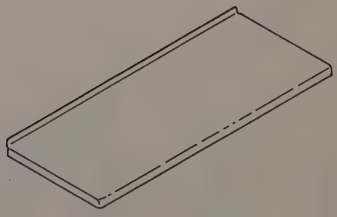
These shelves are intended for use as discrete units located back to wall between a pair of slotted uprights.

In situations where maximum continuity of heavy duty shelving is desirable, the shelving units pass in front of the slotted uprights with ends butting on the centre lines of the uprights. Thus the widths of such units are not defined in the system, and are subject to project requirements. In all such cases spans between support brackets will need to be compatible with loading requirements.

Worktops

Connected to slotted uprights by heavy duty brackets. 600 and 750 units require a pair. 1200 and 1500 units require three brackets.

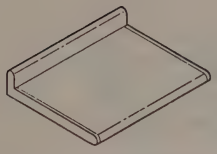
- Aluminium



H	W	D
—	600	500
—	750	500
—	1230	500
—	1530	500

Intended for use as work surfaces or as deep shelves in medical/nursing areas.

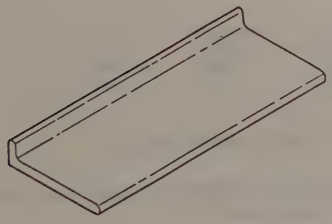
- Linoleum faced



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

Intended for use at standing or sitting height where activities call for a softer desk-like surface.

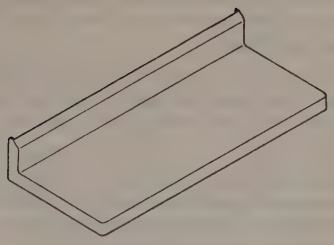
- Post-formed laminate faced



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

These are intended for use in medical/nursing or pharmacy manufacturing areas. In the latter situation, requirements for greater height of upstand may have to be met.

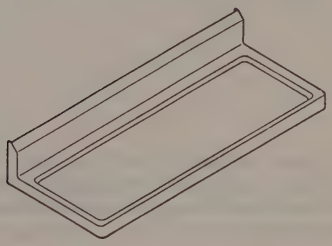
- Stainless steel, plain



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

These are intended for use as heavy duty work surfaces for dry, or relatively dry, activities.

- Stainless steel, dished



H	W	D
200	600	500
200	750	500
200	1230	500
200	1530	500

These are intended for use in proximity to, but not for, wet activities.

Water serviced components

The basin and sink and drainer units in this section are all in stainless steel, connected to slotted uprights by heavy duty brackets.

When considering their use it will be important to have a clear strategy for the project, involving full consultation from an early stage with the local water authority, and those who will be responsible for commissioning and maintenance.

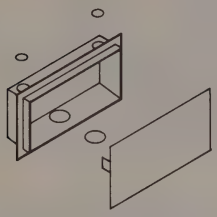
This should be followed at appropriate stages by mock-ups of the various traps, wastes, connectors, etc, and client approval of the proposals. This will enable the specifications and installation processes to be finalised, and the work on site to proceed with confidence.

If supply fittings are to be mounted on the basin or sink units, the required holes must be specified. If they are to be wall mounted then splashback panels with the appropriate pre-formed holes must be specified.

Refer to manufacturers product data for basin and sink bowl sizes, for location of sink bowls in units with drainers, and for details of waste connections.

Careful consideration will need to be given to responsibilities for initial installation of these units and testing of services, within the alternative procurement arrangements referred to in section **5.1**.

- **Plumbing services panel**

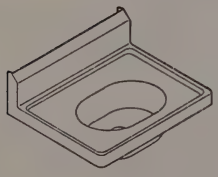


This provides access to hot and cold water supplies and waste for the attachment of flexible pipe connections from any of the water serviced components in this section, where intended to be demountable.

Its design includes a cover panel to enable these service terminals to be concealed, if not required during a period of change in room functions.

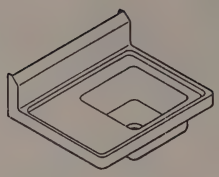
Refer to manufacturers product data for all design and specification details.

- **Hand rinse basin**



H	W	D
200	600	500

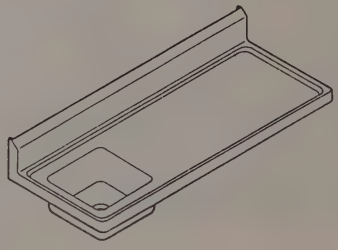
- **Sink**



H	W	D
200	600	500

Left and right hand versions.

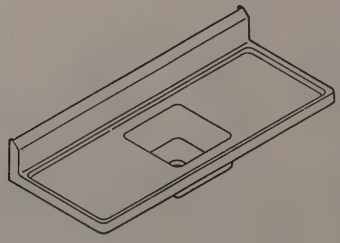
- **Sink with drainer, dished and plain, or dished and fluted.**



H	W	D
200	1230	500
200	1530	500

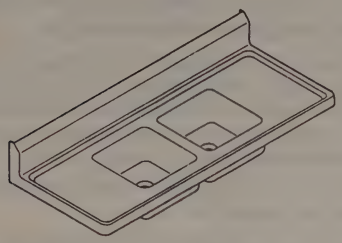
Left and right hand versions.

- **Sink with drainers, dished and plain, or dished and fluted**



H	W	D
200	1230	500
200	1530	500

- Double sink and drainers dished and plain, or dished and fluted



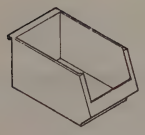
H	W	D
200	1230	500
200	1530	500

Ancillary components

This section is intended to give some examples only of components of an ancillary type, which, as a group, will be largely subject to user initiatives in finding solutions to their requirements, and what is available on the market (with or without adaptation to be compatible with the system).

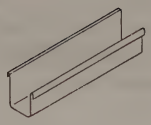
Because of their ancillary nature, no dimensions are given, and the illustrations are intended to be only very generally indicative of their respective types.

- Tote boxes and other proprietary containers



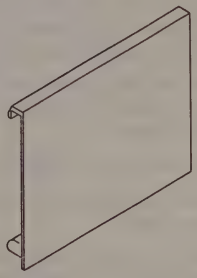
Plastic tote boxes with open tops (as illustrated or with transparent covers) hook onto the grooved panels. Many other types of pre-formed or knock-down container are available for hook-on attachment or shelf mounting. This group of components provides an economical means of containing small items with direct user access, and if suitably located, can eliminate need for labelling.

- Catheter trays



These hook onto the grooved panels, and apart from their volume, in relation to the items to be held in them, the main consideration is their width in relation to the panel widths.

- Accessory backboard



These are hung direct from the rail and have a similar function to equipment panels Type A, but differ in that they are intended to be supplied with items such as coat hooks attached, and in sizes and materials to suit their specific function.

3.5 Strength

Open and closed storage drawer units, shelves, and mobile support units should be tested for strength by the methods described in BS4875 Parts 5, 6, 7 and 8 simulating in-use conditions.

The various tests required for each of the test levels referred to above as set out in Appendix A.

Worktops should be tested by the methods and to the criteria listed in Appendix A.

3.6 Surface finishes

Surface finishes of components fabricated from wood, or wood based materials, should be tested by the methods described in BS 3962, under the following Part numbers and heads.

- Part 2 – wet heat
- Part 3 – dry heat
- Part 4 – marking by liquids
- Part 5 – oils and fats
- Part 6 – mechanical damage

Generally surface finishes should be specified as requiring a 'severe' rating under BS 6250 Part 3; and only exceptionally as 'general' (e.g. linoleum faced worktops for desk type activities).

Appendix A sets out the recommended ratings, which are more stringent for horizontal surfaces than for vertical surfaces.

These criteria are set out in a table on page 29.

Finished surfaces should be smooth and free from application marks.

Plastic laminates should be specified in accordance with BS 3794 Part 1, and tested in accordance with Part 2 of that BS.

The surface finish of stainless steel components should be specified as 'No 3B polished dull buffed' as set out in Table 3 of BS 1449, Part 2.

All mild steel components must be treated to be corrosion resistant.

All surfaces of units should have a true, flat and smooth finish.

3.7 Surface spread of flame

When tested in accordance with BS 476 Part 7, painted and lacquered surfaces should achieve a minimum of Class 4, and melamine veneered surfaces Class 3.

3.8 Testing of hinges, locks and latches

The performance of individual fittings should comply with relevant British Standards (see appendix A and B).

4 Design application

4.1 Co-ordination with building and engineering design

Because the system comprises what is essentially loose equipment located on a rail or on mobile frames, the location and method of fixing the rail are the only considerations regarding co-ordination with building design.

Methods of fixing to hollow plasterboard partitions are set out in **6.2**.

Given the necessary co-ordination between building and engineering design, there should be no difficulty in fixing the rail in new work, but care should be taken in existing buildings to avoid puncturing concealed engineering services.

The main consideration in co-ordinating any installation of the system with engineering services will be the location of socket outlets, telephone jacks, wall-mounted light fittings, and hot and cold water services and wastes, so as to avoid conflict with any of the support or user components. This applies to both the initial installation, and to some later stage when changes in user requirements will call for re-arrangement.

The simplest way to avoid such conflict is to locate all terminals (other than for wall lighting and ward drugs cupboard or the like) within a common zone as indicated by hatching in **Fig. 5**.

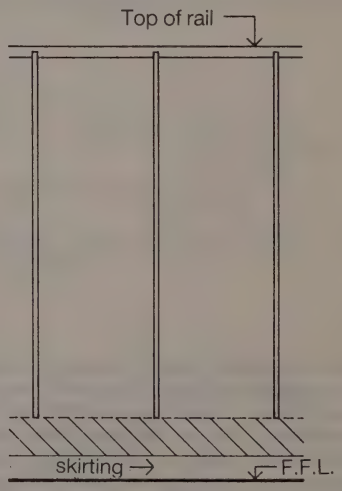


Fig. 5

Wired services can then be extended upwards to any desired location by means of flexible plug-in connections.

It is appreciated that such a solution will involve abandonment of several aspects of conventional practice regarding location of terminals and methods of connecting to them. Not the least of these will be connections to the water serviced components and electrical connections to the ward drugs cupboard, if facility for demounting and some degree of re-location of these components is to be allowed.

Any earthing of the metal items within a given installation should conform to the Institute of Electrical Engineers Regulations.

4.2 Design of layouts

Having established the position of the rail the design process is largely one of determining the bay widths which will accommodate the necessary user components, and relating the aggregate of these bay widths to the dimensions of the room or space – whether in the course of being designed or existing.

The system is not designed to 'turn corners', therefore three possible 'end bay' conditions must be considered as illustrated in Figs. 6, 7, and 8. In all cases the rail should be extended into the corner.

Fig. 6 illustrates the most common condition in health buildings, and the need to allow clearance to the flank wall to:

- accommodate the full width of the last slotted upright
- allow some tolerance for the flank wall being out of plumb
- contribute to an overall loose fit
- facilitate cleaning.

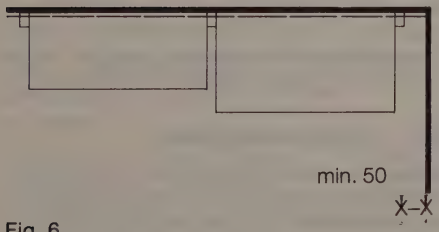


Fig. 6

The same considerations apply to both faces of an external corner end condition illustrated in Fig. 7.

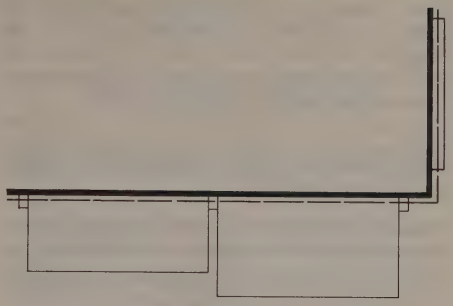


Fig. 7

In the situation illustrated in Fig. 8, the relationship between components at the internal corner will depend upon their projection from the wall face.

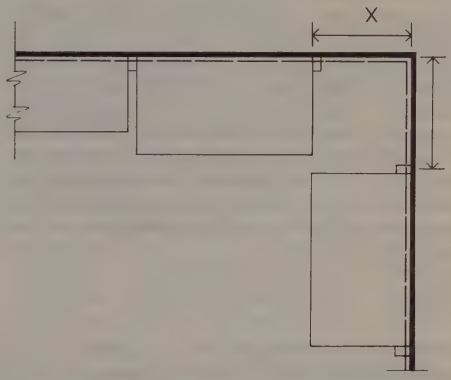


Fig. 8

To maximise the benefits which use of the system can bring, the aim should be to provide maximum scope for:

- user control of day to day working conditions
- possible future changes of use of activity spaces of a more fundamental nature.

This can best be achieved by planning spaces of simple rectalinear shape with maximum continuity of the rail; and by reducing initial installations to a minimum, leaving scope for additions to, or changes of, user components, as the users develop an understanding of their real needs from working experience.

In design situations which may involve conversion of room layout drawings and schedules based on conventional fitted storage and worktop units, it will be important that such conversion is not carried out by simply replacing each conventional item by its equivalent user component in the new system. If user requirements are re-considered in the light of the much wider range of options offered by the latter, it will be found in many instances that these can be better served at lower cost. For example, tote

boxes mounted on a grooved panel may be a more practical and cost effective solution to the storage of small items than a conventional cupboard or open shelving, which will require the means of containing small items.

4.3 Use of non-standard user components

Any width (W) of user component can be used in conjunction with the system, provided that:

- the principles of attachment to the support components are adhered to
- all such non-standard user components within a bay are of the same width.

4.4 Security

Patient safety

Consideration of patient safety may arise in applying the system to accommodation for children or the elderly, in that a lightly loaded installation will offer only limited resistance to lateral movement of the free hanging slotted uprights unless these are secured to the partition at their lower end. Clips for this purpose are included in the support components, or alternatively the slotted uprights can be drilled and screwed to the partition (one screw only per upright).

Theft

Where an installation is considered to be vulnerable to theft of items stored, or of the system components; the slotted uprights can be secured to the wall as above. Lockable cupboards can also be secured to the slotted uprights by means of the carcase locking set included in the support components.

The ward drugs cupboard, medicine cupboard and urine test cupboard must be lockable.

Special consideration should be given to securing the ward drugs cupboard to the wall, and to its protection by a warning light system which operates at or near the cupboard and at a main point or points of staff supervision and control. Fixing should be in accordance with BS 2881.

5 Procurement

5.1 Procedures

Whereas fitted storage systems are procured wholly as Group 1 components, ie supplied and fixed in a building contract, the innovative features of the demountable storage system as described in this HTM are such that there will need to be corresponding innovation in its procurement if the full advantages of the system are to be gained.

This may require some combination of conventional Groups 1, 2 and 3 procedures for procurement of equipment and/or an entirely new approach involving specialist suppliers and installers of the system.

The method, or combination of methods adopted will need to be determined in the light of experience. The following should be considered:

- in new buildings or extensions to existing buildings, the rail will normally be procured by Group 1 procedures (see **6.2** for fixing the rail)
- in small works the rail may be purchased and fixed by the Authority's supply and works staff
- the supply and installation of water serviced components and related support components may be dealt with by Group 1, 2 or 3 procedures
- given that the rail has been supplied and fixed as building work, the remainder of an installation may be carried out as Group 3 equipment by a specialist supplier/installer (as referred to above) employed by the Authority as part of the commissioning of a health building.

Procurement of the system wholly as Group 1 equipment is not recommended as this would lose the many advantages which accrue from the separation of building work and equipping.

5.2 Documentation

Group 1 procedures in respect of the rail, as referred to above, will require the measurement and specification of the rail and the fixings in the bills of quantities, and the provision of room layout drawings showing the location of the rail.

In the case of the Group 2 procedure for water serviced components the work of mounting supports and components on the rail and connecting and testing water and waste services will need to be measured and specified in the bills. The location of these components and service connections should be shown on the room layout drawings.

The Group 3 procedure in respect of the remainder of an installation will follow conventional practice for coding and sortation schedules for ordering, delivery, and allocation to rooms, and requirements for room layout drawings showing their location in each room.

In all cases documentation should state that user components must include the appropriate support components for attachment to slotted uprights or the rail when delivered to site.

Some adjustment to the above procedures and documentation will be required where the Authority employs a specialist firm which undertakes to supply and fix the whole of an installation or alternatively install user components on a rail fixed by others.

5.3 Pricing of support components

To ensure equal competition when obtaining tenders for supply only, or supply and installation of the system (as appropriate to the above alternative forms of procurement) a common basis for pricing the support components should be included in the tender documents.

The method will vary according to the contractual method and local practice, e.g. inclusion of a schedule of rates, or Simple Systems' current price list.

The aim should be to ensure that a common net price for each of the support components can be identified in any tender for the whole system, including such a tender from Simple Systems.

This common net price should be

- for supply only
- at prices ruling at time of supply
- exclusive of all discounts and delivery charges.

5.4 Responsibility for design and specification of the system

Compared to fitted systems, the shift of emphasis in procurement to equipping procedures and documentation will call for corresponding adjustment in the allocation and exercise of responsibility for design and specification as between the design team and those responsible for equipping and commissioning.

6 Installation

6.1 Sequence of work

Whichever of the procurement procedures in 5.1 are adopted, the rail should be fixed and decoration completed before the demountable parts of the system are delivered to site.

The fact that the demountable parts of the system can be quickly and easily assembled does not diminish normal requirements for careful planning of the installation process.

Pre-planning will be of particular importance for components involving co-ordination with engineering services, and special attention is drawn to this in the description of water serviced components.

6.2 Fixing the rail

The rail may be fixed to most types of wall or partition by means of appropriate fixing devices. The safe working load for an installation will depend on the construction of the partition and type of fixing as explained in 3.3.

The rail has fixing holes at approximately 167 centres and it is important that all holes are used when installing the rail. Short make up lengths of rail should not be less than 700 long to obtain adequate spread of load and there must be a fixing at not more than 30 from each end. Similarly all cut ends within a running length of rail must have a fixing within 30 of the cut end.

It may be necessary to site drill holes in the rail to provide additional fixings and 7.25 mm diameter holes will be required.

Finally the rail should be inspected to ensure that all holes have been used before the cover strip is clipped into place. Rail joints should not coincide with those on the cover strip.

Fixing devices

Refer to manufacturers' product data for details of fixing devices. These would include:

- Wood screws of appropriate gauge and length for screwing to timber studs or noggings
- plugs and screws for fixing to solid masonry
- 6 mm diameter cavity fixing devices for fixing to hollow pot or block partitions
- 6 mm diameter proprietary metal cavity fixing devices for fixing to hollow plasterboard partitions.

For fixing the rail to existing hollow plasterboard partitions the use of 50 mm diameter metal timber connectors or flat washers in conjunction with the fixing device could help to spread the load and improve the load bearing capacity of the system.

7 The system in use

7.1 Re-use of components

The system offers considerable scope for the development of facilities and procedures within a hospital for:

- the surrender of components which have become surplus to requirements as a result of changes in user activities
- the supply of alternative, additional or replacement components
- planned maintenance and repair of components.

7.2 Cleaning and maintenance

Routine cleaning of the system should be carried out with a damp cloth using a solution of a neutral detergent in warm water, rinsing with clean water and drying with a clean cloth. High ledges and crevices of the rail should be suction cleaned using an extension piece and appropriate tool, or with a dust control mop.

Periodically all components except the fixed rail should be demounted, washed in a solution of neutral detergent and warm water, rinsed, dried and remounted.

Maintenance of walls and floors can be carried out at this time when the system is demounted.

Appendices

A Performance tests

Performance ratings and test levels

Storage components in this HTM should comply in general with the requirements of BS 6250 Part 3 and BS 4875 Parts 5, 6 7 and 8.

Performance tests to which components should comply are set out below, and specifiers are advised to seek certification or other evidence of compliance with these tests.

Summary of test procedures for storage units

BS4875 para no.	Title	Requirement
6 1 2 (pt 7)	Strength of shelf support	See tables 3 and 4, test level 4.
6 1 3 (pt 7)	Deflection of shelves	See table 3, test level 4.
6 1 4 (pt 7)	Strength of cabinet top and bottom surfaces	
	Units with headroom greater than 1050 mm	Force in N 1,000
	Units with headroom less than 1050 mm	Force in N 450
6 2 2 (pt 7)	Strength of pivotted doors	Test load in kg 40
6 2 3 (pt 7)	Wear and fatigue of pivotted doors	See Table 1, test level 4.
6 2 4 (pt 7)	Slam open/shut of pivotted doors	See table 1, test level 4.
6 4 2 (pt 7)	Strength of flaps	See table 1, test level 4.
6 4 3 (pt 7)	Wear and fatigue of flaps	See table 1, test level 4.
6 5 2 (pt 7)	Slam open/shut of roll fronts	See table 1, test level 4.
6 5 3 (pt 7)	Wear and fatigue of roll fronts	See table 1, test level 4.
6 6 2 (pt 7)	Strength of runners	Test load in kg 40.
6 6 3 (pt 7)	Slam open and slam shut of drawers	See table 1, test level 4.
6 6 4 (pt 7)	Displacement of bottom surface of drawers	See table 1, test level 4.
6 6 5 (pt 7)	Wear and fatigue of drawers and runners	See table 1, test level 4.
6 7 2 (pt 7)	Strength of attachment devices	2 x test level 4, table 3.

Summary of tests for worktops (including desks and cupboards below 1050 mm high)

BS 4875 para no.	Title	Requirement
6 1 (pt 5)	Vertical static load	See table 1, test level 4.
6 2 (pt 5)	Sustained load test	See table 1, test level 4.
6 4 (pt 5)	Vertical impact test	See table 1, test level 4.
6 6 3 (pt 5)	Vertical fatigue tests for cantilevers or worktops.	See table 1, test level 4.

Test programme

Testing ranges of components

The following tests constitute a minimum test programme to cover the whole range of components.

The largest carcase unit, shelf unit and the largest cupboard unit. (If this does not include the longest shelf span then the unit containing this item shall also be tested.)	Test No. 6.1.2, 6.1.3, 6.1.4, 6.1.5, 6.1.6 and 6.7.2 of BS 4875 part 7.
The largest worktop plus the largest bridging worktop (if any) or the largest worktop (if any).	Test No. 6.1, 6.2, 6.3, 6.4 and 6.6 of BS 4875 part 5.
The largest drawer for each type of runner system fitted.	Test No. 6.6.2, 6.6.3, 6.6.4 and 6.6.5 of BS4875 part 7.
The relevant door the geometry of which creates the greatest bending moment on the hinge (for each type of hinge used).	Test No. 6.2.2, 6.2.3 and 6.2.4 of BS 4875 part 7.
The largest hinged flap.	Test No. 6.4.2 and 6.4.3 of BS 4875 part 7.
The largest mobile support unit.	Test No. 6.2 and 6.3 of BS 4875 part 6.
The largest roll front (tambour door).	Test No. 6.5.2 and 6.5.3 of BS 4875 part 7.

Sequence of testing

Groups of tests on specific components shall be carried out in the sequence specified in table 6, but it is not necessary to test the components of the units in any set sequence, except Test No. 6.7.2 (strength of wall attachment devices) which should be carried out at the end of the programme.

Sequence of tests

Component	British Standard	Test Sequence
Pivotted doors	BS 4875 pt 7	6.2.2, 6.2.3, 6.2.4
Hinged flaps	BS 4875 pt 7	6.4.2, 6.4.3
Drawers	BS 4875 pt 7	6.6.4, 6.6.3, 6.6.2
Shelves	BS 4875 pt 7	6.1.2, 6.1.3
Roll front closures	BS 4875 pt 7	6.5.2, 6.5.3
Worktops	BS 4875 pt 7	6.1, 6.2, 6.3, 6.4, 6.6

Test criteria for surface finishes (based on BS 6250 pt 3) (as set out in table on page 29).

Additional tests for mobile storage units

BS4875 para no.	Title	Requirement
6.2 (part 6)	Vertical stability test	Force in N – 500
6.3 (part 6)	Horizontal impact test	Impact load – 50 kg

Additional test for equipment panels

The panel must be capable of supporting a load of 25 kg at an offset in front of the panel surface of 150 mm without exceeding 1 mm surface deflection and with no permanent distortion or damage to the panel. The load should be supported from a bracket mounted centrally on the panel with two fixings not more than 100 mm apart.

Test criteria for surface finishes

surface resistance to:	test method	minimum performance rating	
		Plastic laminate worktops	All exposed surfaces of cupboards and shelves
Wet heat:	BS 3962		
55°C	Part 2	4	3
70°C		4	3
85°C		4	—
Dry heat:	BS 3962		
85°C	Part 3	3	3
100°C		3	2
160°C		3	—
Cold liquids:	BS 3962		
acetone	Part 4	5	2
butyl acetate		5	3
toilet spirits		5	3
potable spirits		5	3
tea		5	4
coffee		5	4
disinfectant (phenol)*		5	3
disinfectant (chloro)*		5	3
paraffin oil*		5	3
blackcurrant juice*		5	3
ammonia solution*		5	3
acetic acid* (4.4% solution)		5	3
olive oil*		5	3
Cold oils and fats	BS 3962 Part 5	5	—
Mechanical damage:	BS 3962		
Scrape, surface penetration	Part 6	5	3
Scrape, penetration to substrate		5	5
Impact		5	3
Cross-cut test		—	3

*Using the specification for these liquids given in BS 5910: Part 1

Flexible rating allowances: test results for any sample may include two failures of one rating point.

Surface texture:
The surfaces of the unit shall be smooth with an even film thickness of the specified finish throughout.

Materials used for linoleum, aluminium and stainless steel worktops and shelves should be in accordance with the British Standard Specifications set out on page 30.

Specifiers should note that while stainless steel will have a resistance to heat well in excess of the above requirements it may be adversely affected by some liquids, particularly bleach.

B Supplemntary specification and design data

Materials and finishes for components

Materials/finishes listed below are preferred solutions. Other suitable finishes, such as plastic laminate or veneer may be used where appropriate.

Cupboards and drawer carcases
- medium density fibreboard with pigmented acid catalyst finish to all exposed surfaces inside and outside.

Side hung doors/drawer fronts
- medium density fibreboard with pigmented acid catalyst finish to all exposed surfaces inside and outside.

Drawer bottoms and cupboard backs
- duo-faced hardboard/medium density fibreboard.

Built up units and up-and-over doors
- aluminium sheet pigmented epoxy coated, or
- polycarbonate sheet clear polished

Dry marker boards (magnetic)
- mild steel with vitreous enamel finish

Pin boards
- 6 mm (min) linoleum on suitable sub-strate pin board in rigid aluminium frame with epoxy powder coating.

Equipment panels and plumbing services panel
- aluminium sheet with epoxy powder coating

Worktops
- anodised or epoxy coated aluminium
- high density chipboard with linoleum finish
- high density chipboard with post-forming grade laminate
- stainless steel.

Shelves
- aluminium sheet epoxy coated
- chipboard with laminate on all faces.

Sinks
- stainless steel.

Specification references for materials and finishes listed above

BS810: Sheet linoleum cork carpet and linoleum tiles.

BS 1142: Part 2: Standard and tempered hardboard.

BS 1186 Parts 1 and 2: Timber for and work-manship in joinery.

BS 1449 Part 2: Stainless steel and heat resisting steel plate, sheet and strip.
Type 304 S16 stainless steel sheet finish No 3 B polished dull buff.

BS 1470: Wrought aluminium and aluminium alloys for general engineering purposes – plate, sheet or strip:
2014-TF, CLAD 2014-TF or equivalent.

BS 1474: Wrought aluminium and aluminium alloys for general engineering purposes – bars, extruded round tubes and sections:
6063-TF

Anodized coating AA20 or AA25, for interior use with arduous conditions involving wear, to BS 1615 Anodic oxidation coatings on aluminium. Specify CLAD 2014A, or other alloy with low proportions of copper, zinc and silicon at surface, in preference to 2014A.

BS 3794: Parts 1 and 2: Post forming grade laminate.

BS 3831: Vitreous enamel finishes for domestic and catering appliances.

BS 5669: Specification for wood chipboard and methods of test for particle board:
Type I (general purpose) or Type III (moisture resistant). Guidance on selection is given in BS 5669 Appendix C.

Medium density fibreboard of 750 kg/m^3 minimum density is available in standard and moisture resistant grades.

General Notes

All surfaces of units shall have a flat true and smooth finish.

Experience has shown that melamine coatings and plastic foil edgings to chipboard are not suitable for use in health buildings.

Laminate only end facings to worktops are not suitable for health buildings.

The final choice of materials and finishes must be the responsibility of the specifier, based on test proven performance, availability, and cost.

Ward drugs cupboard

The ward drugs cupboard described below is currently in use in the NHS.

The cupboard should be fitted with a removable electrical shelf containing light(s) to illuminate the interior of the cupboard, an indicator light visible from the front when the door is closed and an electrical connection box. When mounting or demounting the cupboard this shelf should be removed to allow access to the electrical connection.

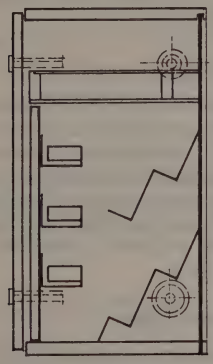
Below the electrical shelf the cupboard is divided into two compartments. One lower compartment is fitted with a second door hinged on the central divider and of the same hand as the outer door.

Each door should be fitted with a lock, the keys to which must differ so that the key which operates the outer door will not operate the inner door.

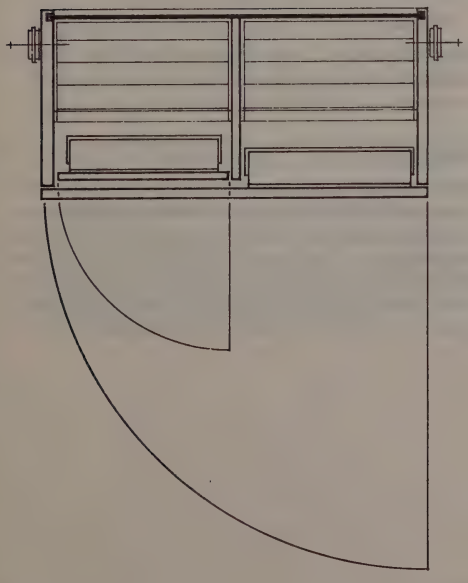
The outer door should be fitted with a dead lock. The lock to the inner door should be a dead lock with key-retaining feature, ie of such a kind that the key cannot be removed until the bolt is in the locked position.

Locks should be in accordance with BS 2881 capable of at least 1000 differs and when tested in accordance with BS 3621 shall withstand 60,000 operations. Escutcheon plates will be required to locks on doors with a lacquer finish.

Provision should be made for screwing the cupboard directly to the back wall or partition. One of the screws must be in the inner section (see 4.4 Security).



vertical section



plan section

Electrical performance

The cupboard should be wired in accordance with the current edition of the IEE regulations. All electrical fittings should comply with the appropriate BS specifications.

Electrical services should be in accordance with DHSS Eng 442 Ref MDB/Eng/14. (see pages 32 and 33).

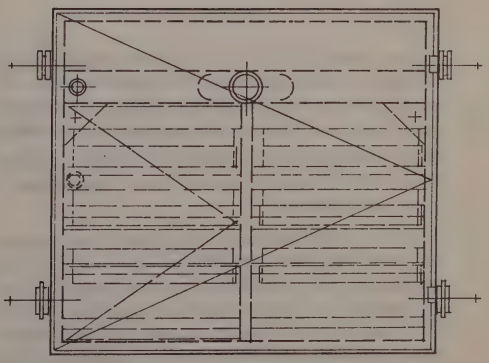
Fixing instructions

The electrical feed should emerge from the wall in the centre of the proposed position of the cupboard and 1700 mm above floor level.

The cupboard should be fixed as follows:

- remove the electrical shelf to reveal the cable entry hole in the back of the carcase
- mount the cupboard on the slotted uprights, threading the wires through the hole to check for length
- drill two pilot holes through the back in the centre to mark the wall
- remove the cupboard and twice drill and plug the wall with suitable plugs
- remount the cupboard, thread the wires through and screw the cupboard to the wall with two 10 gauge woodscrews or similar sized fixings
- connect the wires to the terminals in the connector box in the electrical shelf and replace the shelf.

Because its position is pre-determined by the position of the cable entry the cupboard should always be the first unit of the system to be remounted after demounting for cleaning and maintenance.



DHSS Specification of electrical services to ward drugs cupboard

Regulations

All materials and components of the ward drugs cupboard shall comply with the latest requirements of the Regulations for the Electrical Equipment of Buildings as issued by the Institute of Electrical Engineers, British Standards Specifications (to include all relevant amendments) and the relevant parts of Electrical Safety Code for Hospital Laboratory Equipment, insofar as the correct operation is not at variance with any of these requirements.

Operation

Electrical services to the ward drugs cupboard shall provide the following facilities:

- Illumination of shelf areas automatically when the door is opened.
- Indication on the cupboard (and remotely) that the cupboard is open.
- Continuous power supply indication on cupboard to show that the circuit is functioning.

The internal illumination and 'cupboard open' indication shall be a function of one lamp, controlled by a door operated switch. The lamp holder shall be mounted within the front edge of the hollow shelf enclosed by an opal plastics cover (allowing illumination to the upper and lower sections of the cupboard) behind a translucent red dome lens mounted in the cupboard door.

The power supply indicator lamp shall be fitted within the front edge of the shelf behind a translucent green dome lens in the cupboard door.

Wiring

Wiring shall be 0.75 mm^2 PVC insulated, flexible cables complying with BS 6500 table 16, concealed within the hollow shelf. At the position where connections are to be made to the building and remote indication wiring a hole large enough to prevent chafing of cables is to be provided in the rear of the shelf.

Cabling at the back of the cupboard shall consist of two 400 mm lengths of 0.75 mm^2 PVC insulated, PVC sheathed flexible cables to be connected to the wiring of the building. One of these cables shall provide the incoming service to the cupboard, and the other for connection to a remote indicator, both shall be fully identified and connected to the relevant terminals of the terminal block.

Terminal block

A suitable terminal block containing four terminals shall be provided within the hollow shelf to terminate all connections. The terminals shall be of the pinch screw type and of adequate capacity to securely connect all the strands of all conductors. Each terminal shall be identified as to its use.

Door switch

One micro-switch with an assessed quality to BS 9562 activated by the opening of the outer door shall be fitted in the front edge of the hollow shelf. The switch shall operate the interior/indicator lamp within the cupboard. The spring operation of the switch to be of sufficient strength to force the door to the obviously open position and operate the internal light.

Interior/indicator lamp

One type B15 lamp holder to BS 5042 and a 15 W lamp having a bayonet cap complying with BS 5101 Part 1 1975 to be fitted within the front edge of the hollow shelf behind a translucent red dome lens in the outer cupboard door. The lamp to be enclosed behind an opal plastics cover which shall incorporate sufficient provision for the ventilation of the lamp.

'Power on' indicator lamp

One filament type lamp shall be fitted within the front edge of the hollow shelf behind a translucent green lens, the lens shall be of sufficient dimensions that the indication light is visible when the outer door is closed.

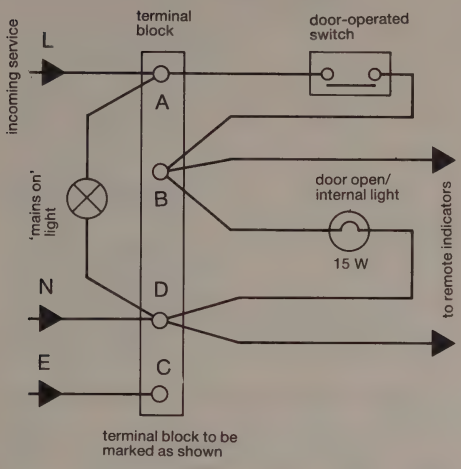
Terminals

All terminals, or any other live part, are to be covered or so protected that they cannot be inadvertently touched.

Earthing

All metal parts and items of electrical equipment shall be efficiently bonded to earth potential. An earth terminal shall be provided as one of the four terminals on the terminal block to which the systems earth of the building shall be connected. An additional core shall be included in the mains cable connection for earthing purposes.

Ward drugs cupboard wiring diagram



Notes:

1 All cables to be 0.75 mm² PVC insulated PVC sheathed.

2 All exposed metal of equipment to be connected to earth terminal 'C' of terminal block (connections not shown).

Plumbing services panel

The plumbing services panel should consist of a box and cover plate and be designed to house terminals to hot and cold water service pipes and to the waste pipe. The box should be large enough to contain stop cocks and blanking off caps. It should be punched with holes for the service and waste pipes and grommets should be supplied to seal the gaps around pipes.

The box should be fitted within the wall or partition to finish flush with the wall surface and receive the cover plate.

Consideration will need to be given to the depth of the box in relation to the thickness of the wall or partition, and in the case of 100 mm thicknesses to provision of cover plates on both sides.

On the room use side the cover plate will need to have facility for lift off for easy access to the service terminals and for partial opening to allow passage of flexible pipe connections.

References

Other Health Technical Memoranda:
56 Partitions
63 Fitted storage system
64 Sanitary assemblies

Other DHSS data:
Activity Data Base
Ergonomic data
Fire Code
Health building notes
Nucleus Hospitals

Statutory legislation:
The Building Regulations
Model Water Byelaws
Byelaws of the Statutory Water Undertakers
Water Act 1973
I.E.E. Regulations

British Standard Specifications and Codes of Practice
BS476 Pt 7. Surface spread of flame
BS 810 Sheet linoleum, cork carpet and linoleum tiles
BS1142 Fibre building boards, Part 2: medium board and hardboard
BS1186 Timber for and workmanship in joinery
Part 1: Specification for timber
Part 2: Quality of workmanship
BS1449 Steel plate, sheet and strip
Part 1: Special finish for vitreous enamelling
Part 2: Stainless and heat resisting steel plate, sheet and strip
BS1470 Wrought aluminium and aluminium alloys for plate, sheet and strip
BS1474 Wrought aluminium and aluminium alloys for bars, extruded round tubes and sections
BS1615 Anodic coatings
BS2881 Specification for cupboards for the storage of medicines in health care premises
BS3621 Thief resistant locks
BS3794 Decorative laminated sheets based on thermosetting resins
Part 1: Specification
Part 2: Methods of determination of properties
BS3831 Vitreous enamel finishes for domestic and catering appliances
BS3962 Methods of test for finishes for wooden furniture
Part 2: Assessment of surface resistance to wet heat
Part 3: Assessment of surface resistance to dry heat
Part 4: Assessment of surface resistance to cold liquids
Part 5: Assessment of surface resistance to cold oils and fats
Part 6: Assessment of resistance to mechanical damage
BS4875 Strength and stability of domestic and contract furniture
Part 5: Methods of determination of strength of tables and trolleys
Part 6: Methods of determination of stability of tables and trolleys
Part 7: Methods of determination of strength of storage furniture
Part 8: Methods of determination of stability of storage furniture
BS5042 Bayonet lampholders
BS5101 Lamp caps and holders
BS5669 Specification for wood chipboard and methods of test for particle board
BS5724 Safety code for medical electrical equipment
BS5910 Methods of test for surface finishes for furniture
Part 1: Assessment of surface resistance to cold liquids
BS6250 Domestic and contract furniture
Part 3: Specification for performance requirements for cabinet furniture
BS6500 Insulated flexible cords and cables
BS9562 Micro switches

Index of Guidance Amendment No. IGAN 17 (for internal use)

The following documents are cancelled by the contents of this document:
CDB 9: MDB 5/1

Printed in the United Kingdom for Her Majesty's Stationery Office
Dd290281 11/89 C40 G3390 10170

DH

HTM 62

Demountable storage systems

HMSO

HMSO BOOKS

HMSO publications are available from:

HMSO Publications Centre
(Mail and telephone orders only)
PO Box 276, London, SW8 5DT
Telephone orders 01-873 9090
General enquiries 01-873 0011
(queuing system in operation for both numbers)

HMSO Bookshops
49 High Holborn, London, WC1V 6HB 01-873 0011 (Counter service only)
258 Broad Street, Birmingham, B1 2HE 021-643 3740
Southey House, 33 Wine Street, Bristol, BS1 2BQ (0272) 264306
9-21 Princess Street, Manchester, M60 8AS 061-834 7201
80 Chichester Street, Belfast, BT1 4JY (0232) 238451
71 Lothian Road, Edinburgh, EH3 9AZ 031-228 4181

HMSO's Accredited Agents
(see Yellow Pages)

and through good booksellers

£4.30 net

ISBN 0 11 321261 5